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Generalized Problematic Internet Use Scale 2: Results of Validation on Polish Sample

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ABSTRACT This study aims to adapt the Problematic Internet Use Scale. The scale of Generalized Problematic Internet Use is an important tool for measuring the intensity of the problem. Widely used in English, Portuguese or Italian, it indicates the importance of the obtained result. Validation of the Polish group will allow to use it in Polish conditions. In order to validate the results, the 523 (516 after data cleaning) group of Internet users was surveyed. The study covered people of Polish origin aged 18-47, 304 women and 212 men. The original tool was translated two times, into Polish and then into English by independent translators. There were conducted Exploratory Factor Analysis that showed five-factor structure, which explained 73.9% of variance; $chi^2/df = 1.21$; Confirmatory Factor Analysis showed good fitness of proposed model, $chi^2/df = 1.66$, RMSEA = 0.035 and reliability measured by Cronbach alpha was 0.89. The obtained results indicate satisfactory psychometric values of the Polish version of Generalized Problematic Internet Use Scale 2. The conducted validation may contribute to a wider application in the Polish group, also in further research and constitute an important tool for scientific purpose s. Due to the theoretical background of the Problematic Use of the Internet, the adapted questionnaire can be used as well for preventive actions.

INDEX TERMS Generalized problematic Internet use, polish sample, Internet addiction.

I. INTRODUCTION

The Internet has become an integral part of our lives. The development of technology such as the Internet has changed and transformed the world around us. The use of the Internet itself was not without consequences for us, both positive and negative. The first research on the negative aspects of the Internet was related to Internet Addiction [1]. Later on, other constructs were developed, such as: Compulsive use of the Internet [2] or the Problematic Use of the Internet [3]. The scale of Generalized Problematic Use of the Internet is based on the last construction, which was created as an improvement of Davis' concept of Pathological Use of the Internet [4]. The basis for its construction was the need to create a coherent theoretical model that would contain both causes, images and negative consequences of a given phenomenon [3]. The whole was inscribed in the cognitive-behavioral paradigm, based on many constructs related to this trend, such as habits or self-regulation [5]. Problematic Internet Use is defined as a certain pattern of behavior which repetitiveness leads to negative consequences of using the Internet. In contrast to Internet addiction, we do not treat problematic Internet use as a disorder, but rather as a continuum on which it is possible to determine the intensity of the studied phenomenon [6]. It is an important construction, allowing not only to measure a person's current state, but also to investigate the background of this phenomenon. Based on the model of Problematic Internet Use, it is possible to specify risk factors, and to develop preventive programs to prevent further deepening of the Problematic Internet Use phenomenon. A holistic approach to a person's relationship with the Internet allows the study to take into account not

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only measurable factors, such as time spent online or negative consequences observed by the subject's environment, but also beliefs that lead to specific behavioral patterns.

II. RESEARCH BACKGROUND

A. FROM PATHOLOGICAL TO PROBLEMATIC INTERNET USE

The first model of Pathological Internet Use understood interchangeably as Problematic Internet Use was created in 2001 by Davis [4]. It took into account both distal and proximal factors. Distal factors were considered to be situational aspects and the possession of a certain pathology, which in combination with the use of the Internet could lead to the development of inappropriate cognitive and behavioral conclusions. Such a combination may have contributed to the development of non-adaptive beliefs, which combined with social isolation or lack of social support led to the generalized pathological use of the Internet and ultimately being visible through behavior [4], [7].

The model was modified by Caplan, who distinguished four substructures that are inextricably linked to the Davis model. One of them is the preference for on-line social contacts understood as a conscious choice of these types of contacts over those in the real world. Cognitive engagement is a pattern of repetitive thoughts of beliefs related to the Internet, the intensity of which increases when the person is offline. Compulsive use of the Internet indicates a type of use that bears the hallmarks of a lack of internal regulation and control over the activities performed. The purpose of mood regulation is to use the Internet to regulate emotions and avoid unpleasant sensations. Negative consequences, on the other hand, prove the visible, behavioral after-effects of Problematic Internet Use [7], [8].

The presented structure allows to measure a much wider phenomenon than the Internet Addiction, which would be only the highest results of the Problematic Use of the Internet. This is particularly important in prevention, where the detection of a slight deterioration of functioning, rather than advanced phenomena, allows for a quick implementation of the program and prevention of further development of a given structure [9]. An important factor is also the fact that the intensity of Problematic Internet Use is not only measured by the time spent on using this technology, but also by several other cognitive and behavioral factors, allowing to obtain a full picture of the phenomenon [10]. Internet addiction is a construct that was created earlier and its theoretical foundation was based on gambling addiction. Appropriate diagnostic criteria have been developed based on those of gambling and the construct itself has no theoretical basis for the occurrence of an Internet addiction. This means that it is able to diagnose the occurrence of the phenomenon but does not answer the question: what factors led to the development of Internet addiction. The construction of Problematic Internet Use, on the other hand, is embedded in the cognitive-behavioral paradigm and assumes the occurrence and presence of certain factors whose appropriate intensity leads to the occurrence of the phenomenon [3]. The validation of this tool will allow not only to classify the severity of Problematic Internet Use, but also to be used in prevention.

As the research has shown, Problematic Use of the Internet is connected with many psychosocial problems and difficulties. Depression [11]–[14], social anxiety [15]–[17], obsessive-compulsive disorders [11], [18], binge-eating [19], borderline personality disorders [20]–[22] or psychomotor hyperexcitability are pointed out here [23], [24]. Having a consistent theoretical basis allows for testing hypotheses in the cognitive-behavioral paradigm and for predicting the possible effects of the occurrence of a given behavior. Internet addiction, on the other hand, refers to other behavioral addictions, e.g. gambling, which means that apart from consistent criteria that allow to distinguish whether a person suffers from Internet addiction or not, there is no theoretical basis that would indicate the mechanism on its formation and development [25].

It has been shown that the existence of a certain pathology can be a risk factor in the occurrence of Problematic Internet Use. One of the most frequently reported problems are symptoms of depression, anxiety, stress. In the next part of the article we will examine the relationship between Problematic Internet use and the above variables using the Depression, Anxiety and Stress Scale tool. The same tool was used in the Portuguese validation of the tool [8], which will allow for results that can be compared between the Polish and Portuguese samples. Based on the analysis of the literature, there are significant theoretical discrepancies between the Problematic Internet Use and Internet Addiction, while the need to check the theoretical accuracy of the tested tool by means of correlation analysis with Internet Addiction Test is indicated. This tool was also used in Portuguese validation [8].

B. INTERNET USE IN POLAND

Along with the development of this technology, research was developed to check the negative consequences of this phenomenon. The earliest works were focused on Internet Addiction [26], while with the development of research other constructs were also created, such as Compulsive use of the Internet or the Problematic Use of the Internet. Based on the CSO report from 2019, 90% of people between 16-24 use the Internet on a smartphone [27]. Additionally, studies have been conducted with the Internet Addiction Test among Polish youth, which has showed that there are 1.45% of people addicted to the Internet among junior high school youth and 8.88% at risk of addiction, while among secondary school youth the percentage of addicts equal 0.93% and 10.8% are at risk of addiction [28]. In addition, it is indicated that the risk of Internet addiction among young people is more related to boys than girls [29]. Other research conducted on junior high school students has showed that 4.06% of people meet the criteria of problematic use of the Internet, and 34.5% are at risk of problematic use of the Internet [30]. In people from upper secondary schools, 3.29% meet the criteria and 34% of persons are at risk.

III. AIM OF THE STUDY

Based on the analysis of available research in Poland, the majority of scientists take up the subject of Internet Addiction and its correlates and determinants. In this way, many variables such as personality determinants [31], loneliness [29], family factors, parents' attitudes [32] and personality types have been studied [33]. Problematic Use of the Internet is mentioned mainly in the context of research reviews and tool reviews. Studies combining Problematic Internet Use with personality traits, early non-adaptive patterns, age, social support, self-esteem and possible prediction of this phenomenon were conducted by the authors of this paper [34]–[36]. The obtained results indicate the existence of multilevel relationships between the mentioned variables and Problematic Internet Use and the possible use of a validated tool in prophylaxis and education. However, taking into account the limitations of the test to study Internet addiction, which result from its theoretical establishment, the authors point to the high usefulness of validation and testing the reliability of a tool that could be particularly useful in building and testing theories related to the cognitive-behavioral paradigm, which is not possible in the case of the Internet Addiction construct.

Based on the presented theses, the main aim of the presented research is to validate GPIUS2 in the Polish group and to investigate the relationships between similar but theoretically different tools, as well as to indicate the relationships between the most frequently proposed occurrence factors, such as depression, anxiety and stress.

IV. METHOD

A. PARTICIPANTS AND PROCEDURE

A heterogeneous sample of 523 Polish Internet users over a period of 9 months (March 2018 to November 2018) was obtained. The data was collected using an on-line survey, which was constructed on the google portal of the survey. Link to the survey was sent to people interested in using social networking sites, e-mailing list and Internet forums. The data was collected and analyzed anonymously. The study was carried out with the prior consent of the Ethics Committee, at the Department of Pedagogy and Psychology (now the Department of Social Sciences), Institute of Psychology (Opinion No. 1/2018, of 21.01.2018), University of Silesia. The invitation to participate was sent in the form of a post to which one could respond, and additionally encouraged to send the obtained link to further friends. It was decided to use the online platform because of the greater anonymity of the respondents and the possibility to reach as many people as possible. Ensuring anonymity through an online survey allows to minimize the impact of social effects, such as: creating a specific image in the survey, trying to please the researcher, preferring middle answers. In order to ensure the reliability and validity of the research sample, the snowball sampling method consisted of several stages. Using a winter metaphor, it resembled more a purposeful ball rolling to create a snowman than an uncontrolled ball throwing down a slope. The first stage was to find the right persons and start a chain of recommendations. The second stage was the qualification of potential respondents. Qualified respondents were engaged to help in the sample selection. The types of chains and the number of cases in each chain were controlled. Along with the research, constant supervision of recommendation chains and the quality of obtained data was conducted. In order to prepare the Polish version of GPIUS2, the method of back translation was applied, each of the items was translated into Polish, then the items were translated back into English and compared [37]. Concordance of competent judges was measured and it is equal to Kendall's $W = 0.9$, $p < 0.001$. The final version was agreed upon after testing the match between the two versions.

B. QUESTIONNAIRES

Socio-demographic survey. The survey was used to investigate the relationship between basic socio-demographic data and Problematic Internet Use. The survey included questions about gender, age, romance (Yes/No), marital status (free, informal, marital, divorced, widower), education (primary, lower secondary, secondary and higher), professional status (work, unemployed, studies, studies and works), place of residence (village, small town, medium town, big town). Another element included questions about the time of using the Internet daily and weekly, the most frequently chosen device for browsing the Internet, the place where the network is most frequently used and the purpose of using the Internet.

GPIUS2 – Generalized Problematic Internet Use Scale 2 [8]. The scale consists of 15 items that measure five constructions. There are 3 questions for each structure. The scale measures preference for online social interaction, mood regulation, cognitive preoccupation, compulsive Internet use and negative outcomes. Each question can be answered by selecting from a 7-point scale, starting with 1 - strongly disagree and ending with 7 - Strongly agree. The maximum score possible on the scale is 105 and the minimum is 15.

IAT – Internet Addiction Test [38]. The Internet addiction test consists of 22 questions. The maximum score is 110 and the minimum score is zero. The higher the score, the greater the symptoms of Internet addiction. Based on the result, you can determine a mild, moderate and severe Internet addiction. Each question can be answered by choosing one of the 6 answers from 0 - Does not apply to 5 - Always. In this study, the Polish version of IAT was used, which was adapted by R. Poprawa, Alpha Cronbach was equal to 0.93 [38].

DASS-21 Depression, Anxiety and Stress Scale - 21 [39]. This tool consists of three subscales, each of which consists of 7 questions. Subscribers to depression, anxiety and stress, respectively. The answer can be given by selecting from 4 possible options, starting with 0 - Did not apply to me at all and ending with 3 - Applied to me very much, or most of the time. In order to calculate the overall score you need to sum up the results of the individual scales and then add the results multiplied by two to each other, which allows you to obtain a scale with a minimum score of 0 and a maximum

score of 42. The Polish version of the DASS-21 scale was developed by M. Makara-Studzińska *et al.* [39]. Alpha Cronbach was equal to 0.92.

C. PRELIMINARY DATA PROCESSING AND ANALYSIS

Before performing advanced analyzes, it was decided to clean the data. We analyzed the case and checked for missing values. Due to the incompleteness of the answers, 3 cases were excluded. We also analyzed the presence of the same values for all tests and rejected 4 cases. The sample size was n = 516. The analyzes were carried out using Statistica 13.3 (StatSoft, Poland), SPSS IBM (PS IMAGO PRO) and JASP 0.12.0.0. Analysis were conducted to check the dimensional and factorial structure of construct. To obtain additional characteristics of carried out study confirmatory factor analysis, the analysis of relationships between tests measuring similar constructs, tests showing a connection with psychosocial problems, the analysis of internal cohesion indicators and the analysis of three risk groups have been conducted. The dimensionality of GPIUS2 was examined using EFA and CFA for the indicated model.

V. RESULTS

A. DESCRIPTIVE STATISTICS

People aged 18 to 47 years participated in the study. The largest group of respondents were single and working people. The amount of time spent on the Internet during the week ranged from 7 to 98 hours. The lowest age at which people started using the Internet was 3 and the highest was 33. Most people use the Internet most often on their smartphones, at home. The vast majority of socio-demographic characteristics are presented in Table 1.

TABLE 1. Descriptive statistics of main socio-demographic characteristic.

N	516
Gender (woman, %; men, %)	304 (59%); 212 (41%)
Age (mean, SD)	28.27 (8,72)
Relationship status	
Single	233 (45.15%)
Informal relationship	195 (37.80%)
Married	79 (15.31%)
Divorced	9 (1.74%)
Education	
Primary	46 (7.79%)
Vocational	61 (10.34%)
High school	198 (33.56%)
Higher	211 (35.76%)
Occupational status (n,%)	
Working	263 (50.97%)
Studying/School	143 (27.71%)
Working and Studying	95 (18.41%)
Unemployed	15 (2.9%)
Place of residence	
Village	82 (13.90%)
Small town	154 (26.10%)
Middle town	164 (27.80%)
Big town	116 (19.66%)
Daily Internet usage (hours) (mean, SD)	4.84 (1.89)
Weekly Internet usage	33.93 (13.24)
Age of Internet use initiation (years) (mean, SD)	14.31 (6.31)
Preferred channel of Internet access (n, %)	
Smartphone	284 (55%)
Tablet	3 (0,6%)
Desktop computer	43 (8,33%)
Laptop	186 (36%)
Preferred location for accessing the Internet (n, %)	
Home	358 (69.38%)
Workplace/School/University	135 (26.16%)
Other	23 (4.46%)

B. EXPLORATORY FACTOR ANALYSIS

An exploratory factor analysis has also been carried out to examine whether certain factors will be extracted and to see how the data will be reduced without the theoretical assumptions attributed to the structure. The best results were obtained for the 5 factor structure. Exploratory factor analysis was performed after checking the Kaiser-Mayer-Olkin test. The KMO measure showed a value of 0.875. It is a measure of the adequacy of sample selection, it is assumed that the minimum value is 0.6 but it should be as high as possible with the expected point close to 0,9. This measure is the ratio of correlation of the variables to the magnitude of partial correlation of these variables. It is the basis for the decision on the validity of the factor analysis. Another test was Barlett's sphericity test, which was chi2= 127.9, df = 105, p < 0.11, $chi^{2/}$ df = 1.21. The obtained result indicates the correlation of variables and the possibility of factor analysis. The analysis was performed using the main components method, using standard Varimax rotation, which minimizes the number of variables that have high loads in each factor.

For the first factor the highest loads were obtained for questions 4 (0.85), 9 (0.83) and 14 (0.65). The second factory is loaded by question: 1 (0.85), 6 (0.87) and 11 (0.88). The third factory is loaded by question: 2 (0.68), 7 (0.83) and 12 (0.76). The fourth factory consists of the question: 5 (0.60), 10 (0.65) and 15 (0.77). For the last, fifth factor, the question: 3 (0.76), 8 (0.63) and 13 (0.80). The value of loads equal and higher than 0.6 was assumed. The 5-factor structure explains 73.9% of the accumulated total variance.

C. CONFIRMATORY FACTOR ANALYSIS

Based on the results obtained from exploratory factor analysis, it was decided to check Problematic Internet Use model consisting of 5 subscales.. The analysis was carried out using the diagonally weighted least squares (DWLS) method, due to the fact that this method is proposed to analyze skewed/non-linear data. Obtained result indicates a good match between the data and the model.

Based on Table 2, good model matching results were obtained. The chi^2/df value was 1.66 and RMSEA was 0.035. Tucker-Lewis Index and Relative Noncentrality Index was also checked, both indicators gave satisfactory results.

D. RELIABILITY

In order to examine the reliability, analyzes were conducted which showed that the standardized Cronbach alpha was

TABLE 2. Obtained model-fitting parameters for confirmatory factor analysis.

Indicator name	Indicator value for tested model	Cut off for good fit [45]
chi^2/df	1.66	<3.0
Comparative Fit Index (CFI)	0.995	>.90
Tucker-Lewis Index (TLI)	0.990	>.95
Relative Noncentrality Index	0.995	>.95
RMSEA	0.035 90% CI [0.000-0.076]	>.05
Standarized root meand square residual (SRMR)	0.040	>.05

0.89 for GPIUS2 positions and 0.80 for GPIUS2 scales. The Guttman split-half reliability was 0.89. The McDonald's omega was 0.893.

Cronbach's alpha values for each subscale were examined. For the preference scale for online social interaction was 0.88, for the mood regulation scale was 0.73, for the cognitive preoccupation scale was 0.82, for the compulsive Internet use scale was 0.76 and for the negative outcomes scale was 0.66.

McDonald's omega values for each subscale were examined. For the preference scale for online social interaction was 0.88, for the mood regulation scale was 0.75, for the cognitive preoccupation scale was 0.78, for the compulsive Internet use scale was 0.79 and for the negative outcomes scale was 0.66.

A bootstrapped correlation analysis was carried out, which showed statistically significant correlations from strong to moderate. The most significant correlation was obtained between GPIUS2 and Internet Addiction Test (0.82, $p < 0.01$). Moderate results showed correlations between GPIUS2 and three DASS-21 subscales, the Depression Scale obtained the highest correlation (0.29, $p < 0.01$), followed by the Anxiety Scale (0.23, $p < 0.01$) and the Stress Scale (0.18, $p < 0.05$). The analysis also showed a significant correlation between weekly time spent on the Internet and GPIUS2 (0.25, $p < 0.05$).The results obtained in correlation between GPIUS and IAT are higher than those obtained in the Portuguese adaptation [8].

E. RISK GROUPS

In order to examine whether the intensity of GPIUS2 differentiates the respondents in terms of other variables and socio-demographic data, it was decided to use the average and standard deviation for the sum of GPIUS2. Using these data, three groups were formed: the low risk group: mean minus standard deviation, high risk group: mean plus standard deviation and intermediate group, which is between the low and high risk groups. The mean for the scale was 42.55 and the standard deviation was 14.05. Due to the size of the sample, it was decided to use the criterion of 1.5 for both skewness and kurtosis [44]. This means that above these values the variable is considered to deviate from the normal distribution. The values of skewness and kurtosis for the sum of GPIUS2 did not exceed 1.5 and amounted to: skewness 0.9 and kurtosis 1.14 (41). People in the low-risk group achieved results in the range of 15-28, people in the high-risk group achieved results in the range of 57-105. The intermediate group included people with results in the range of 29-56.

The results showed that people from the low-risk group received an average of 24.69 points (16% of the research group), people from the medium-risk group received an average of 41.16 points (67% of the research group), and people from the high-risk group received an average of 66.73 points (17% of the research group).

The obtained results indicate with some caution the reliability and validity of the tested tool on a Polish sample. The scale has a five-factor structure, and each factor corresponds to a different structure. Correlation analysis showed statistically significant correlations with significant variables included in the study. The scale also allows to distinguish low, medium and high risk groups.

TABLE 3. Bootstrapped correlation matrix with 95% bias-corrected between the GPIUS2 and study variables.

Measure	GPIUS2	BCa 95% Ci
IAT	.82*	.79;.85
Depression	.29*	.21;.37
Anxiety	.23*	.16;.31
Stress	.18*	.10;.27
Weekly Internet Use	.25*	.15;.35
	POSI	Bca 95%Ci
IAT	.56*	.50;.62
Depression	.15*	.06;.23
Anxiety	.11*	.02;.20
Stress	.09*	.01;.17
Weekly Internet Use	.21*	.12;.29
	MR	Bca 95%Ci
IAT	.55*	.49;.61
Depression	.23*	.15;.31
Anxiety	.22*	.13;.30
Stress	.16*	.08;.25
Weekly Internet Use	.16*	..08;.25
	NC	Bca 95%Ci
IAT	.62*	.57;.67
Depression	.21*	.13;.29
Anxiety	.15*	.07;.24
Stress	.13*	.04;21
Weekly Internet Use	.16*	.07;.24
	CP	Bca 95%Ci
IAT	.66*	.60;.70
Depression	.27*	.19;.35
Anxiety	.19*	.11;.27
Stress	.16*	.07;.24
Weekly Internet Use	.23*	.15;.31
	CIU	Bca 95%Ci
IAT	.67*	.62;.72
Depression	.27*	.14;.31
Anxiety	.19*	.10;.27
Stress	.16*	.07;.24
Weekly Internet Use	.23*	.08;.25

*p<0.01

Note: GPIUS2: Generalized Problematic Internet Use Scale 2, IAT: Internet Addiction Test; POSI – Preference for online social interaction; MR – Mood regulation; NC – Negative consequences; CP – Cognitive preoccupation; CIU – Compulsive Internet use; Bootstrap results are based on 10000 bootstrap samples.

TABLE 4. Differences between risk groups*.**

Kruskal-Wallis ANOVA, p values<0.001			
Age K-W T=63.79, p<0.001		Weekly Internet Use K-W T=36.50, p<0.001	
LR-MR	Z=2.91**	LR-MR	Z= 2.80**
LR-HR	Z=7.60*	LR-HR	Z=5.83*
MR - HR	Z=6.71*	MR-HR	Z=4.59*
Starting Age K-W T=58.75, p<0.001		Anxiety K-W T=23.06, p<0.001	
LR-HR	Z=7.06*	LR-MR	Z=3.98*
MR-HR	Z=6.76*	LR-HR	Z=4.55*
IAT K-W T=226.80, p<0.001		Depression K-W T=28.8, p<0.001	
LR-MR	Z=7.70*	LR-MR	Z=3.61*
LR-HR	Z=14.89*	LR-MR	Z=5.34*
MR-HR	Z=11.19*	MR-HR	Z=3.17**
Stress K-W T=14.89, p<0.001			
LR-MR**		Z=3.35	
LR-HR*		Z=3.58	

*p<0.001, p<0.01**
*** LR – low risk, MR – middle risk, HR – high risk

The obtained results indicate statistically significant differences between the distinguished groups with respect to the variables listed in Table 4. A post-hoc Levene test was used, which showed that the variance was not homogeneous, therefore analyzes were carried out using ANOVA rang Kruskal-Wallis. Statistically significant differences were found between all three groups for age Internet addiction, weekly Internet time spent online and depression subscale. For variables such as age, age of which they started to use Internet, anxiety and stress subscale, two pairs of statistically significant differences were distinguished.

VI. CONCLUSION

The main objective of this study was to validate the scale of Problematic Use of the Internet on a Polish sample and to examine the psychometric properties of the above test. The study was carried out in order to adapt the Generalized Scale of Problematic Use of the Internet 2. Based on the available literature, no Polish validation was found. The validation allows to analyze and confirm the proposed factor structure of the tool and indicate the reliability and validity of the scale on the Polish group. In order to achieve this goal, a number of statistical analyzes were carried out to check and obtain the best-fitting model, to check the relationships with similar but theoretically distinct constructs, and to examine the reliability of the tool with the use of several different indicators. Analyzes were also carried out to differentiate between people at low and high risk and to investigate their relationships with other variables. Based on the exploratory factor analysis, a five-factor structure of the examined scale was indicated. Confirmation analysis confirmed this structure, which is also based on the theoretical aspect of the tool. Correlation analyzes showed significant links with the Internet Addiction Test, which task is to measure a similar but not identical structure. Correlation analyzes with the Depression, Stress and Anxiety subscales have shown statistically significant links with the factors indicated in the theoretical pattern of the Problematic Use of the Internet as accelerating the development of the phenomenon. The obtained results indicate good psychometric values of the GPIUS2 test in terms of structure, reliability and validity.

The obtained results of the division into risk grades are also consistent with the data obtained in the Portuguese validation [8], in which the low risk group obtained an average of 24.68 points, the medium risk group 43.06 points and the high risk group 65.16 points.

A. LIMITATION OF THE STUDY

Apart from its strengths, the study also has some limitations. Due to the self-report questionnaires, the obtained data may be burdened with some error caused by the desire to fall out better in the questionnaire than it is true, difficulties in remembering past events or showing bias in the responses (preference for central or extreme responses) [41], [42]. In addition, the resulting prevalence rates may be overstated due to the nature of the sample [43], [44]. According to many studies, young people are the group with the highest risk of occurrence of Problematic Internet Use. Providing information about the reliability and validity of the tool may contribute to a wider use, especially in the field of psychoeducation, prevention and educational programs.

APPENDIX

Polish version of GPIUS2 with factor loads for individual items.

	Factor loading
1. Wolę społeczne interakcje przez Internet niż bezpośrednią komuni kację. / I prefer online social interaction over face-to-face communication.	POSI 0.85
2. Korzystałam/em z Internetu, aby porozmawiać z innymi, kiedy czułam/em się osamotniona/y. / I have used the Internet to talk with others when I was feeling isolated.	MR 0.68
3. Kiedy przez jakiś czas nie korzy stam z Internetu, zaczynam być pochłonięta/y myślami o byciu on-line. / When I haven't been online for some time, I become preoccupied with the thought of going online.	CP 0.76
4.Trudno mi kontrolować czas spędzony w Internecie. / I have difficulty controlling the amount of time I spend online.	CIU 0.85

5.Korzystanie z Internetu utrudniło mi zarządzanie moim życiem. / My internet use has made it difficult for me to manage my life.	NC 0.60
6.Kontakty społeczne on-line są dla mnie bardziej komfortowe niż spotkania twarzą w twarz. / Online social interaction is more comfortable for me than face-to-face interaction.	POSI 0.87
7.Używałam/em Internetu, aby poczuć się lepiej, kiedy byłam/em przygnębiona/y. / I have used the Internet to make myself feel better when I was down.	MR 0.83
8.Czułabym/czułbym się zagubiona/y gdybym nie mogła/mógłkorzystać z Internetu. / I would feel lost if I was unable to go online.	CP 0.63
9.Trudno mi kontrolować korzystanie z Internetu. / I find it difficult to control my Internet use.	CIU 0.83
10.Opuściłam/em spotkania towarzyskie i zajęcia z powodu korzystania z Internetu. / I have missed social engagements or activities because of my Internet use.	NC 0.65
11.Wolę komunikować się z ludźmi on-line niż twarzą w twarz. / I prefer communicating with people online rather than face-to-face.	POSI 0.88
12.Używałam/em Internetu, aby poczuć się lepiej kiedy byłam/em zdenerwowana/y. / I have used the Internet to make myself feel better when I've felt upset.	MR 0.76
13.Obsesyjnie myślę o byciu on-line, kiedy jestem off-line. / I think obsessively about going online when I am offline.	CP 0.80
14. Kiedy nie korzystam z Internetu trudno mi oprzeć się pragnieniu bycia on-line. / My Internet use has created problems for me in my life.	CIU 0.65
15. Moje korzystanie z Internetu stwarzał o problemy w moim życiu. / When offline, I have a hard time trying to resist the urge to go online.	NC 0.77

*POSI = preference for online social interaction, MR – mood regulation, NC – negative consequences, CP – cognitive preoccupation, CIU – compulsive internet use.

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